

Appl. No. 10/674,669
Docket No. 8598MR
Amdt. dated November 7, 2006
Reply to Office Action mailed on August 9, 2006
Customer No. 27752

REMARKS

Claim Status

Claims 1, 9 and 15 have been amended. Claims 1-15 remain pending. Applicants reserve the right to pursue the original claims in this and other applications. Applicants respectfully request reconsideration of the above-referenced application in light of the amendments and following remarks.

Claim Amendments

Independent claim 1 has been amended to recite a halogen dioxide generating system comprising, *inter alia*, "a) a source . . . b) a non-membrane electrolysis cell comprising an anode and a cathode, and having a cell chamber with an inlet and an outlet, *wherein the inlet is configured to allow the aqueous feed solution to the inlet at about 10 to about 1000 ppm; c) a passage comprising the aqueous feed solution adjacent to the anode . . . ; and d) an electric current supply . . . wherein the outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm.*" (emphasis added). Support for the claim amendment is found in Applicants' specification, at least on p. 5, ll. 30-33 and p. 18, ll. 15-20.

Independent claim 9 has been amended to recite a halogen dioxide salt generating and re-circulating system comprising, *inter alia*, "a) a source . . . b) a non-membrane electrolysis cell comprising an anode and a cathode, said anode and said cathode being separated by a non-conducting porous flow, and having a cell chamber with an inlet and an outlet; c) a passage with an inlet and outlet for the chamber formed through at least a portion of said non-conducting porous flow barrier . . . d) an electric current supply; and e) a return passage for returning reverted halogen dioxide salt back to said source, *wherein the inlet is configured to allow aqueous feed solution to enter the inlet at about 10 to about 1000 ppm, and wherein the outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm.*" (emphasis added). Support for the claim amendment is found in Applicants' specification, at least on p. 5, ll. 30-33 and p. 18, ll. 15-20.

Claim 15 recites an electrolysis device comprising, *inter alia*, "at least one cell chamber with an inlet and an outlet, wherein said inlet is configured to allow influent to enter the inlet at about 10 to about 1000 ppm, and wherein said outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm; at least one electrolytic

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cell with at least one anode and at least one cathode, wherein at least one pair of an anode and a cathode is separated by a porous barrier; a reservoir . . . at least one pump . . . and at least one power source." (emphasis added). Support for the claim amendment is found in Applicants' specification, at least on p. 5, ll. 30-33 and p. 18, ll. 15-20.

Rejection Under 35 U.S.C. § 112, First Paragraph

Claims 1-8 and 15 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The rejection is respectfully traversed. At the outset, Applicants respectfully disagree with the Office Action's assertion that the specification "does not provide literal support for the claimed electrical current ranges." (p. 2). Nonetheless, to expedite prosecution, claims 1 and 15 have been amended to omit the alleged offending claim language. Claims 2-8 depend from claim 1 and should be similarly allowable with claim 1 for at least the reasons provided above. The Examiner's approval is respectfully solicited.

Rejection Under 35 U.S.C. § 112, Second Paragraph

Claim 9 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The rejection is respectfully traversed. The Office Action asserts that there is 'insufficient antecedent basis' for the claim language 'halogen dioxide salt.' Applicants respectfully note that "halogen dioxide salt," as recited in claim 9, does not claim 'the' or 'said' halogen dioxide salt. Nonetheless, to expedite prosecution, the preamble of claim 9 has been amended to provide the alleged antecedent basis. The Examiner's approval is respectfully solicited.

Rejection Under 35 U.S.C. § 102(b) by Kelley

Claim 1 stands rejected to under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,306,281 ("Kelley"). The rejection is respectfully traversed.

Applicants respectfully direct the Examiner's attention to the "Amendments" section of the instant paper, in which Applicants amended independent claims 1, 9 and 15, to particularly point out and distinctly claim the subject matter that the Applicants regard as their invention. Support for the present amendment is found throughout the specification and claims, as originally-filed. No new matter was introduced.

As such, Applicants respectfully submit that Kelley does *not* disclose that *an inlet is configured* to allow influent to enter the inlet at about 10 to about 1000 ppm, much less

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that *an outlet is configured* to allow effluent to exit out the outlet at about 0.1 to about 2 ppm. In contrast, Kelley discloses 50,000 ppm (Example 1), 20,000 ppm (Example 2), 10,000 ppm (Example 3), 1 gram per liter, *i.e.*, 1000 ppm (Example 4), and similar configurations for the influent inlet. Moreover, Kelley discloses a chlorine dioxide content of 150 ppm (Example 8), 350 ppm (Example 7), 4000 ppm (Example 10), 5 ppm (Example 11), and similar configurations for the effluent outlet. Kelley must disclose *each and every* claim limitation for a proper § 102(b) rejection, and Kelley does not.

As such, Kelley does not teach a halogen dioxide generating system comprising, *inter alia*, “a) a source . . . b) a non-membrane electrolysis cell comprising an anode and a cathode, and having a cell chamber with an inlet and an outlet, *wherein the inlet is configured to allow the aqueous feed solution to the inlet at about 10 to about 1000 ppm*; c) a passage comprising the aqueous feed solution adjacent to the anode . . . ; and d) an electric current supply . . . *wherein the outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm*,” as recited in claim 1 (emphasis added).

For at least these reasons, Kelley does not teach the subject matter of amended claim 1, and therefore, the § 102(b) rejection of claim 1 should be withdrawn.

Rejection Under 35 U.S.C. § 103(a) over Kelley and Spence

Claim 2 stands rejected to under 35 U.S.C. § 103(a) as being unpatentable over Kelley in view of U.S. Patent No. 4,414,070 (“Spence”). The rejection is respectfully traversed.

Claim 2 depends from claim 1 and for at least the reasons provided above with regard to claim 1, Kelley does not disclose, much less suggest the subject matter of independent claim 1. Specifically, Kelley does *not* disclose or suggest, *inter alia*, “a cell chamber with an inlet and an outlet, *wherein the inlet is configured to allow the aqueous feed solution to the inlet at about 10 to about 1000 ppm . . . [and] wherein the outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm*,” as recited in claim 1 (emphasis added). Kelley discloses 50,000 ppm (Example 1), 20,000 ppm (Example 2), 10,000 ppm (Example 3), 1 gram per liter, *i.e.*, 1000 ppm (Example 4), and similar configurations for the influent inlet. Further, Kelley discloses a chlorine dioxide content of 150 ppm (Example 8), 350 ppm (Example 7), 4000 ppm (Example 10), 5 ppm (Example 11), and similar configurations for the effluent outlet.

Spence is relied upon for disclosing that the efficiency of electrolytic cells is dependent on the anode-cathode distance (Col. 1, ll. 24-29), and adds nothing to rectify

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the deficiencies associated with Kelley. Applicants also respectfully submit that the Office Action is misinterpreting the teachings of Spence. Col. 1, ll. 24-29 of Spence, indicates that "cell efficiency is dependent on the anode-cathode distance . . . and the subjacent electrolyte-metal interface." (emphasis added). In other words, Spence's teachings relate to an electrolytic cell with multiple subjacent electrolyte-metal interfaces. In this manner, Spence discloses an anode positioning system that raises and lowers the anodes. Spence does *not* teach that the *gap* between the anode and cathode is a result effective variable as the Office Action asserts.

As such, Kelley and Spence, even if properly combinable which they are not, still would not teach or suggest that "the anode and the cathode *are confronting and co-extensive, with a chamber gap of 0.5 mm or less,*" as recited in dependent claim 2. These are additional reasons for the allowance of claim 2. Consequently, the § 103(a) rejection of claim 2 should be withdrawn.

Rejection Under 35 U.S.C. § 103(a) over Kelley and Kaczur

Claims 3-5 and 7-8 stand rejected to under 35 U.S.C. § 103(a) as being unpatentable over Kelley in view of U.S. Patent No. 5,106,465 ("Kaczur"). The rejection is respectfully traversed.

Claim 3-5 and 7-8 depend from claim 1, and for at least the reasons provided above with regard to claim 1, should be similarly allowable with claim 1. Specifically, Kelley does *not* disclose or suggest, *inter alia*, "a cell chamber with an inlet and an outlet, wherein the inlet is configured to allow the aqueous feed solution to the inlet at about 10 to about 1000 ppm . . . [and] wherein the outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm," as recited in claim 1 (emphasis added). Kelley discloses 50,000 ppm (Example 1), 20,000 ppm (Example 2), 10,000 ppm (Example 3), 1 gram per liter, *i.e.*, 1000 ppm (Example 4), and similar configurations for the influent inlet. Further, Kelley discloses a chlorine dioxide content of 150 ppm (Example 8), 350 ppm (Example 7), 4000 ppm (Example 10), 5 ppm (Example 11), and similar configurations for the effluent outlet.

Kaczur is relied upon for disclosing a porous platinum coated titanium anode, and adds nothing to rectify the deficiencies associated with Kelley. Consequently, the § 103(a) rejection of claims 3-5 and 7-8 should be withdrawn.

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Rejection Under 35 U.S.C. § 103(a) over Kelley, Kaczur and DE '407

Claim 6 stands rejected to under 35 U.S.C. § 103(a) as being unpatentable over Kelley in view of Kaczur, and further in view of DE 100 17 407 ("DE '407"). The rejection is respectfully traversed.

Claim 6 depends from claim 1, and for at least the reasons provided above with regard to claim 1, Kelley does not disclose, much less suggest the subject matter of independent claim 1. Specifically, Kelley does *not* disclose or suggest, *inter alia*, "a cell chamber with an inlet and an outlet, *wherein the inlet is configured to allow the aqueous feed solution to the inlet at about 10 to about 1000 ppm . . [and] wherein the outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm,*" as recited in claim 1 (emphasis added). Kelley discloses 50,000 ppm (Example 1), 20,000 ppm (Example 2), 10,000 ppm (Example 3), 1 gram per liter, *i.e.*, 1000 ppm (Example 4), and similar configurations for the influent inlet. Further, Kelley discloses a chlorine dioxide content of 150 ppm (Example 8), 350 ppm (Example 7), 4000 ppm (Example 10), 5 ppm (Example 11), and similar configurations for the effluent outlet.

DE '407 is relied upon for a continuous water treatment, and adds nothing to rectify the deficiencies associated with Kelley and Kaczur. The Office Action asserts it would have been obvious to incorporate the DE '407's water treatment apparatus since it would provide simple handling, safe production, and *reduced costs*. Applicants respectfully disagree. The water treatment apparatus would *increase* costs and *increase* the complexity of Kelley's apparatus. As such, there is no motivation to combine the references. The only motivation to combine is gleaned from Applicant's specification. These are additional reasons for the allowance of claim 6. Consequently, the § 103(a) rejection of claim 6 should be withdrawn.

Rejection Under 35 U.S.C. § 103(a) over Kelley, Zappi, Cowley and DE '407

Claims 9-15 stand rejected to under 35 U.S.C. § 103(a) as being unpatentable over Kelley, in view of U.S. Patent No. 6,328,875 ("Zappi"), in further view of U.S. Patent No. 5,965,004 ("Cowley"), and further in view of DE '407. The rejection is respectfully traversed.

Applicants respectfully direct the Examiner's attention to the "Amendments" section of the instant paper, in which Applicants amended independent claims 9 and 15, to particularly point out and distinctly claim the subject matter that the Applicants regard as their invention. Support for the present amendment is found throughout the

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specification and claims, as originally-filed. No new matter has been introduced. Applicants also note that the Office Action relies on at least four separate references to render the subject matter, as recited in claims 9-15, obvious. Applicants at the outset, respectfully submit that there is *no motivation* to combine all four references as the Office Action asserts.

Moreover, Kelley discloses 50,000 ppm (Example 1), 20,000 ppm (Example 2), 10,000 ppm (Example 3), 1 gram per liter, *i.e.*, 1000 ppm (Example 4), and similar configurations for the influent inlet. Further, Kelley discloses a chlorine dioxide content of 150 ppm (Example 8), 350 ppm (Example 7), 4000 ppm (Example 10), 5 ppm (Example 11), and similar configurations for the effluent outlet. Kelley does not teach or suggest the subject matter of amended claims 9 and 15.

Kelley does not teach or suggest a halogen dioxide salt generating and recirculating system comprising, *inter alia*, "a) a source . . . b) a non-membrane electrolysis cell comprising an anode and a cathode, said anode and said cathode being separated by a non-conducting porous flow, and having a cell chamber with an inlet and an outlet; c) a passage with an inlet and outlet for the chamber formed through at least a portion of said non-conducting porous flow barrier . . . d) an electric current supply; and e) a return passage for returning reverted halogen dioxide salt back to said source, *wherein the inlet is configured to allow aqueous feed solution to enter the inlet at about 10 to about 1000 ppm, and wherein the outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm,*" as recited in claim 9 (emphasis added), much less an electrolysis device comprising, *inter alia*, "at least one cell chamber with an inlet and an outlet, wherein *said inlet is configured to allow influent to enter the inlet at about 10 to about 1000 ppm, and wherein said outlet is configured to allow effluent to exit out the outlet at about 0.1 to about 2 ppm;* at least one electrolytic cell with at least one anode and at least one cathode, wherein at least one pair of an anode and a cathode is separated by a porous barrier; a reservoir . . . at least one pump . . . and at least one power source," as recited in claim 15 (emphasis added).

Zappi, Cowley and DE '407 add nothing, alone or in combination, to rectify the deficiencies associated with Kelley. Claims 10-14 depend from claim 9 and should be similarly allowable with claim 9 for at least the reasons provided above with regard to claim 9, and on their own merits. The § 103(a) rejection of claims 9-15 should be withdrawn.

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Provisional Rejection Under the Doctrine of Non-Statutory Obviousness-Type Double-Patenting Over the '842 Patent

Claims 1, 9 and 15 stand provisionally rejected under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over the claims 13-22 of U.S. Patent No. 7,048,842 ("the '842 Patent"). The provisional rejection is respectfully traversed.

Applicants note that independent claims 1, 9 and 15 have been amended. As such, Applicants believe that the subject matter between the present application and the '842 Patent is patentably distinct. For example, the '842 Patent claims do *not* recite that *an inlet is configured* to allow influent to enter the inlet at about 10 to about 1000 ppm, much less that *an outlet is configured* to allow effluent to exit out the outlet at about 0.1 to about 2 ppm. As a result, the provisional obviousness-type double patenting rejection should be withdrawn.

Provisional Rejection Under the Doctrine of Non-Statutory Obviousness-Type Double-Patenting Over the '667 Application

Claims 1-8 stand provisionally rejected under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending the '667 application in view DE '407. The provisional rejection is respectfully traversed.

Claims 6-8 depend from amended independent claim 1. As such, Applicant believes that the subject matter between the present application and the '667 application is patentably distinct. For example, the '667 Application claims do *not* recite that *an inlet is configured* to allow influent to enter the inlet at about 10 to about 1000 ppm, much less that *an outlet is configured* to allow effluent to exit out the outlet at about 0.1 to about 2 ppm. As a result, the provisional obviousness-type double patenting rejection should be withdrawn.

Conclusion

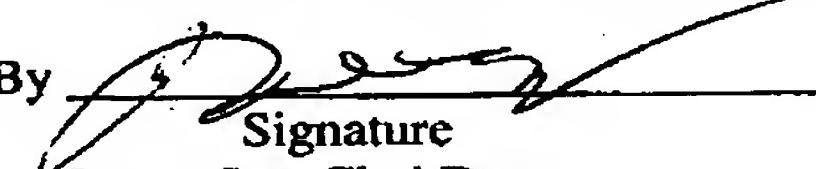
In light of the above remarks, it is requested that the Examiner reconsider and withdraw the rejections of claims 1-15. Early and favorable action in the case is respectfully requested.

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This response represents an earnest effort to place the application in proper form and to distinguish the invention as now claimed from the applied references. In view of the foregoing, reconsideration of this application, entry of the amendments presented herein, and allowance of Claims 1-15 is respectfully requested.

Respectfully submitted,

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